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ABSTRACT

Earlier research has attributed the performance decrements of older adults on many tasks to cautiousness. The purpose of the present investigation was to assess differences in performance between "cautious" and "risky" older adults. Male and female older adults, aged 65-80, were classified as either cautious (N=9) or risky (N=9) on the basis of a personality test. Participants also completed an attention task consistng of 12 separate dichotic messages (trials) composed of numbers and letters. Errors of omission and intrusion were recorded and summed across trials to obtain a maximum error score. Data analyses indicated that cautious older adults made significantly more errors than risky older adults. The significant difference in total errors may have been due to the additive effects of cautious older adults' omission and intrusion errors. (Author/AG)

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Cautiousness and Auditory Selective Attention Performance of Older Adults

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Paper presented at the 35th Annual Meeting of the Gerontological Society, Boston, November 19-23, 1982.

Cautiousness on the part of older adults has been attributed for performance decrements on many tasks in the literature. This study sought to assess whether there were differences in performance on an auditory selective attention task between "cautious" and "risky" older adults. On the basis of a personality test eighteen older adults who were classified as either cautious (n = 9, M age = 71.89) or risky (n = 9, M age = 72.56) were administered an auditory selective attention task consisting of 12 separate dichotic messages (trials) composed of numbers and letters.

Prior to each trial a cue word indicated which channel (ear) the individual should monitor. The participants task was to report all digits heard on the relevant channel immediately upon hearing them. Based on previous research it was hypothesized that cautious older adults would make more errors on the attention task than risky older adults. Results supported this hypothesis, that is, cautious older adults made significantly more errors than risky older adults.

Life-span investigations of auditory selective attention or dichotic listening have consistently yielded age differences in performance (Clark & Knowles, 1973; Craik, 1965; Inglis & Tansey, 1967; Panek, Barrett, Sterns, & Alexander, 1977; Panek & Rush, 1982; Schonfield, Trueman & Kline, 1972). Many hypotheses have been postulated to explain these age differences (see Layton, 1975; Schaie & Gribben, 1975). One suggests the avoidance of risk or greater cautiousness of elderly persons may play a part in the observed decrements (Panek & McGown, 1981; Schaie & Gribben, 1975). Support for this hypothesis comes from various experimental studies in which older adults' performance is marked by an increased number of errors of omission (omitting an answer) rather than errors of commission (emitting an incorrect answer) (Botwinick, 1978; Okun, 1976; Okun, Siegler & George, 1978).

One major difficulty in this area of research has to do with the measure of cautiousness employed (Botwinick, 1978) as well as the lack of congruence among assumed measures of cautiousness. That is, measures of cautiousness have included such things as responses to "life event" questionnaires, omission errors, intrusion-omission ratios, etc., (see Botwinick, 1978; Okun, 1976; Okun, et al., 1978; Panek & McGown, 1981). These measures of cautiousness may be inappropriate since they all attempt to measure a personality-behavioral characteristic, i.e., cautiousness, in an indirect inferential manner from task performance, just as we inferentially assume learning has occurred on the basis of task performance.

Therefore, it would appear as though the most appropriate measure of a personality-behavioral characteristic such as cautiousness would be a personality assessment instrument. One traditional method of personality assessment for young and old adults are projective techniques. Though many projective techniques used with the elderly have been criticized (see Kahina, 1978), one projective instrument, the Hand Test (Wagner, 1962), has satisfactorily addressed these criticisms for use with older adults with regard to: normative data (Panek, Sterns & Wagner, 1976; Panek & Rush, 1979; Panek, Wagner & Avolio, 1978); reliability (Stoner & Lundquist, 1980); validity (Panek & Hayslip, 1980); visual, auditory and health status (Panek, et al., 1978). Therefore, on the basis of the literature it would appear as though the Hand Test would be a valid and appropriate assessment instrument for use with older adults.

Interestingly, one scoring category on the Hand Test, the High Minus Low Score (H-L), can be interpreted as a measure of cautiousness on the part of the individual (Wagner, 1962, pp. 24-25). Briefly, the H-L score is the time differential between the individuals' slowest (High) initial response time to any of the test stimuli and their fastest (Low) response to any of the test stimuli.

Therefore, the purpose of the present exploratory investigation was to determine if there were any performance differences between "cautious" and "risky" older adults on an auditory selective attention task. It was hypothesized that older adults who were

categorized as being cautious on the basis of the personality test would make more errors on an auditory selective attention task.

Method

Participants. Participants were eighteen community-living older adults ranging in age from 65 to 80 years (3 males, 15 females). These individuals were paid $5.00 for participation; all were right-handed and in good health (self-report). In accordance with the goal of the experiment these individuals were administered the Hand Test according to standard instructions and a median-split was made on the H-L scoring category (Mdn = 15.00 seconds) which resulted in two groups of 9 individuals: cautious (H-L Mdn < 15.00) and risky (H-L Mdn < 15.00). The ages and years of education for these groups were: cautious (M age = 71.89, range 67 to 75 yrs.), (M education = 11.33, range 7 to 15 yrs.); risky (M age = 72.56, range 65-80 yrs.), (M education = 11.89 yrs., range = 8 to 17 yrs.). It should be noted that there were no sex differences on the H-L scoring category but there are significant age differences (Stoner, Panek, and Satterfield, 1982).

Procedure and Apparatus. Auditory selective attention was measured by a tape consisting of 12 dichotic messages (trials) composed of numbers and letters with different information presented simultaneously to each ear. This task requires the participant to repeat aloud any digits detected on the designated relevant channel (ear) immediately upon hearing them. Each trial presents 16 dichotic pairs of numbers and letters, at a rate of 2 per second, with either 4 or 6 digits presented on the relevant channel and

4 digits presented on the non-relevant channel. The position of both relevant and nonrelevant digits are distributed randomly within and across the 12 trials; provided relevant digits never co-occur with nonrelevant digits. A cue word occurring 1.5 seconds before the start of a trial indicates which channel is relevant for that trial ("coffee" indicated left ear; "apple" right ear). These were an equal balance of right and left ear trials.

This task was individually administered in a quiet booth using a tape recorder and stereophonic earphones, with each participant adjusting the volume to a subjectively comfortable level. The participants listened to recorded instructions followed by three practice trials and then began the test of 12 trials.

Two types of errors were recorded: errors of omission were recorded when the participant failed to report a digit on the relevant channel; and, errors of intrusion when the participant reported a digit from the non-relevant channel. These errors were summed across trials to obtain a maximum error score.

Results and Discussion

Data (see Table 1) indicated the cautious group made significantly more total errors than the risky group ($t(16) = -1.82$, $p < .05$), which supported the proposed hypothesis.

Since there was a significant difference among the groups in terms of total errors it was decided to do post hoc analyses on the omission and intrusion errors separately to observe which of these was potentially responsible for the significant difference.

Though the cautious group made more omission and intrusion errors than the risky group these differences were not significant. That is, the significant difference in total errors appears to be due to the additive effects of cautious older adults making more omission and intrusion errors.

Results suggest that cautious older adults are both more hesitant to respond (errors of omission) and at the same time emit more digits from the irrelevant channel (errors of intrusion), probably, in order to be safe. That is, since they heard a digit they have a 50-50 chance of being correct.

Future studies should attempt to replicate these findings with measures of auditory selective attention, and other tasks, as well as include additional age groups.

Table 1

Mean Errors By Group

	Cautious (n=9)		Risky (n=9)	
	M	SD	M	SD
Total Errors	70.78	12.75	58.78	13.56
Omission Errors	42.33	15.70	39.11	16.83
Intrusion Errors	28.44	14.62	19.67	15.28

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